

AMENDMENTS TO THE DRAWINGS

Please substitute the enclosed sheets 3/8 and 8/8, labeled "Replacement Sheets," for the corresponding sheets presently in the case.

In response to objections, Figs. 4 and 5 are amended to correct reference numerals for diffuser header 52 and end 54. Also, Fig. 5 is amended to correct the reference numeral for retainer device 50 and to add reference numerals for plates 34 and spaces 36.

Also in response to an objection, Figs. 16 and 17 are amended to provide numerals for retaining device 106, consistent with the specification at page 10, line 28.

It is believed that the amendments to the drawings address all objections raised in the Office Action. Therefore, it is requested that the objections be withdrawn and that the drawings be accepted.

REMARKS

The specification is amended at page 5 to refer to substrate 18; at page 9 to refer to end 14 and overlap portions 94, and at page 10 to refer to weak areas 40, consistent with the terms elsewhere in the specification. Also at page 10, the specification is amended to clarify the relationship between the rigid insulation board 94 and weak areas 40, as shown in Figs. 16-18.

Claim 1 is amended to clarify that the inlet and the outlet of the housing are in fluid communication with the flow paths of the plasma-generating substrate, and to more particularly point out that the electrically insulating layer is disposed between the mat and the housing, as shown in Fig. 6. Dependent claim 2 is amended to call out a diffusion header, see diffusion header 52 is shown in Fig. 6. Claim 6 is amended to more particularly recite that the diffusion header comprises an end spaced apart from the plasma-generating substrate, see end 54 in Fig. 6. Claim 7 is amended to clarify that the recited distance is between the end of the diffusion header in claim 6 and the plasma-generating substrate. The dependency of claim 10 is amended in view of the cancellation of the intervening claim.

Claim 11 is amended to clarify that the housing comprises an end plate, to delete reference to a retaining device, and to call out a compression stop disposed about the plasma-generating substrate, see Figs. 13 and 14. Also, claim 11 is amended to recite that the mat is compressed to a density greater than 0.3 grams/cc between the end plate and the compression stop, and a density of less than 0.3 grams/cc laterally about the plasma-generating substrate, as described at page 9, lines 8-10. Claim 18 is amended to call out a diffusion header that is spaced apart from the compression stop in claim 13, upon which it depends. Dependent claim 19 is amended to recite that the end of the diffusion header is spaced apart from the compression stop

by a distance of about 0.5 and 1.5 mm, as described at page 9, lines 20-22.

Objection to Specification

In response to objections, the specification has been amended at pages 5, 9, and 10 for consistency in referring to substrate 18, overlap portions 94 and weak areas 40. In view of the amendments, it is requested that the objection be withdrawn.

Claim Rejections based upon Foster et al., Hemingway, and/or Foster

Claims 1, 5 were rejected under 35 U.S.C. § 102(e) as anticipated by United States Patent No. 6,797,241, issued to Foster et al. in 2004 (referred to as Foster et al.). Claims 2, 6-7, 13 and 18-19 were rejected under 35 U.S.C. § 103 as unpatentable over Foster et al. in view of United States Patent No. 6,464,945, issued to Hemingway in 2002. Claims 10-11 were rejected under 35 U.S.C. § 103 as unpatentable over Foster et al. in view of Hemingway and further in view of United States Patent No. 6,159,430, issued to Foster in 2000 (referred to as Foster).

Claim 1 is directed to the aspect of Applicants' invention that includes an electrically insulating layer between the mat and the housing, as shown in Fig. 6. Claims 2, 5-7 and 10-11 are dependent upon claim 1 and recite additional features preferred or desirable in the practice of that aspect of Applicants' invention. Claim 13 is directed to the aspect of Applicants' invention that includes a compression stop disposed about the substrate and apart from the housing, as shown in Figs. 13 and 14. Claims 18-19 are dependent upon claim 13. For purposes of clarity and in view of the amendments herein, the rejections of claims 1 and 13, as well as the corresponding dependent claims, are addressed separately.

With regard to claim 1, Foster et al. describes a reactor stack 10 that includes a pleated separator 24 formed by an insulating layer 18 that is folded so as to extend within passages 20 between reactor plates 12, 14, see Figs. 3 and 5, and col. 5, lines 12-15 and 37-39. The resulting stack is wrapped in a mat 28 and disposed in a housing 38, see Fig. 7 and col. 6, beginning at line 18. In contrast, in the present aspect of Applicants' invention shown in Fig. 6, an insulating layer 28 is provided between the mat 16 and the housing 12. Foster et al. does not disclose an insulation layer between the mat and the housing. Thus, Foster et al. does not anticipate or suggest this aspect of Applicants' invention.

Nor do the secondary references make up the deficiency. Referring to Fig. 8, Hemingway discloses a reactor assembly 70 wherein the reactor element 52 is surrounded by a dielectric mat 74 and arranged in a housing 72, see col. 6, beginning at line 7. The mat in Hemingway arranged against the housing, with no electrically insulating layer therebetween. Foster describes a catalytic converter that is not a non-thermal plasma reactor and so does not include the electrical connections required for a non-thermal plasma reactor. The catalytic converter in Foster includes a substrate 18 surrounded by mats, e.g., mat 32, and disposed in a housing 72, see Figs. 1 and 2. Foster does not provide an insulating layer between the housing and the mat. Moreover, in the absence of applied voltage, Foster does not need an electrically insulating layer.

Thus, even when read together, there is nothing in any of the references to point the practitioner to provide an electrically insulating layer between the mat and the housing. Without this, the references, even when combined, do not teach or suggest this aspect of Applicants' invention.

Claim 1 is directed to Applicants' non-thermal plasma reactor that includes an electrically insulating layer between the housing and the mat. In each of the references, the mat is arranged directly against contact with the housing. None of the references disclose an insulating layer therebetween. Thus, the references do not teach or suggest Applicants' invention as set forth in claim 1.

Claims 5-7 and 10-11 are dependent upon claim 1 and so not shown by the references at least for the reasons given with regard to that claim.

With regard to claim 13, Foster et al. shows, in Figs. 9 and 10, non-thermal plasma reactors having a mat 28 about a reactor stack 10 within a housing 38. Significantly, Foster et al. does not show an end plate as part of the housing, or a compression stop disposed about the stack apart from the housing. Without these features, Foster et al. cannot point to a compression ring effective to compress the mat against the end plate to a higher density than the mat density laterally about the substrate. Thus, Foster et al. does not teach or suggest this feature of Applicants' invention.

Nor do Hemingway or Foster show a compression stop. Hemingway compresses the mat between the substrate and the end of the housing 72, and does not provide an element mounted on the substrate to enhance this end mat compression. Foster describes a catalytic converter, in contrast to a non-thermal plasma reactor, and provides mat sections 34 adjacent the ends of the substrate, see col. 4, lines 12-45, but does not show an element mounted on the substrate to assist in compressing the mat against the end plate. Thus, since none of the references show a compression stop about the substrate spaced apart from the housing, it follows that the combination cannot point the practitioner to use such compressing stop to compress the mat

against the end plate to a higher density.

Claim 13 calls for a plasma-generating substrate, a housing having an end plate, and a compression stop. The compression stop is disposed about the plasma-generating substrate and apart from the housing. Furthermore, the claim calls for a mat, which mat is compressed to a density greater than 3.0 grams/cc between the end plate and the compression stop, and less laterally about the substrate. None of the references show a compression stop or any similar element for increasing the density of the mat against the end plate. Without this, the references cannot be fairly read as pointing to Applicants' invention in claim 13, or in claims 18-19 dependent thereon.

Therefore, it is respectfully requested that the rejection of claims based upon Foster et al., Hemingway and/or Foster be reconsidered and withdrawn, and that the claims be allowed.

Double Patenting Rejections

Claims 1 and 5 were rejected under the judicially created doctrine of obviousness-type double patenting over Foster et al. Claims 2, 6-7, 10-11, and 13 were rejected under the doctrine of double patenting over Foster et al. in view of Hemingway. Claims 10-11 were rejected under the doctrine of double patenting over Foster et al. in view of Hemingway and Foster.

For the reasons above, Foster et al., Hemingway and Foster, separately or in combination, do not suggest, as an obvious extension, an electrically insulating layer as recited in claim 1 et al. or a compression stop as recited in claim 13 et al.

Therefore, and in view of the amendments herein, Applicants' contend that the present claims are not obvious extensions of the references, but rather recite patentably distinct features

not suggested by the references. Accordingly, it is respectfully requested that the rejection of double patenting based upon Foster et al., Hemingway and/or Foster be withdrawn, and that the claims be allowed.

Claims 1, 2, 13, were rejected under the doctrine of double patenting based upon United States Patent Application Serial No. 09/881,277, filed June 14, 2001, concurrent with the present application. It is noted that Serial No. 09/881,227 issued as United States Patent No. 6,893,617 on May 17, 2005 (referred to as the '617 patent).

Since both the present application and Serial No. 09/881,277 were filed on June 14, 2001, it follows that the maximum terms would expire on the same day, except if extended for undue delays on the part of the Patent Office. Applicants contend that, where patents would concurrently expire, the issue of double patenting does not arise.

Nevertheless, in an attempt to advance prosecution, enclosed is a Terminal Disclaimer disclaiming any portion of the term of a patent granted on the present application that exceeds the term for the '617 patent.

The Terminal Disclaimer renders moot the double patenting rejection. Therefore, it is requested that the rejection based upon the '617 patent be withdrawn, and that the claims be allowed.

Conclusion

It is believed, in view of the amendments and remarks herein, that all grounds of rejection of the claims have been addressed and overcome, and that all claims are in condition for allowance. If it would further prosecution of the application, the Examiner is urged to contact the undersigned at the phone number provided.

The Commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 50-0831.

Respectfully submitted,



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